

SEMICONDUCTOR STRUCTURES AND MANUFACTURING METHODS**Abstract of the Disclosure**

A method for forming substantially uniformly thick, thermally grown, silicon dioxide material on a silicon body independent of bon axis. A trench is
5 formed in a surface of the silicon body, such trench having sidewalls disposed in different crystallographic planes, one of such planes being the $\langle 100 \rangle$ crystallographic plane and another one of such planes being the $\langle 110 \rangle$ plane. A substantially uniform layer of silicon nitride is formed on the sidewalls. The trench, with the with substantially uniform layer of silicon nitride, is subjected to a
10 silicon oxidation environment with sidewalls in the $\langle 110 \rangle$ plane being oxidized at a higher rate than sidewalls in the $\langle 100 \rangle$ plane producing silicon dioxide on the silicon nitride layer having thickness over the $\langle 110 \rangle$ plane greater than over the $\langle 100 \rangle$ plane. The silicon dioxide is subjected to an etch to selectively remove silicon dioxide while leaving substantially un-etched silicon nitride to thereby
15 remove portions of the silicon dioxide over the $\langle 100 \rangle$ plane and to thereby expose underlying portions of the silicon nitride material while leaving portions of the silicon dioxide over the $\langle 110 \rangle$ plane on underlying portions of the silicon nitride material. Exposed portions of the silicon nitride material are selectively removed to expose underlying portions of the sidewalls of the trench disposed in
20 the $\langle 100 \rangle$ plane while leaving substantially un-etched portions of the silicon nitride material disposed on sidewalls of the trench disposed in the $\langle 110 \rangle$ plane. The structure is then subjected to an silicon oxidation environment to produce the substantially uniform silicon dioxide layer on the sidewalls of the trench.